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ABSTRACT

The demand for school construction and the agency regulations and practices involved in the process are described in this report. A four-part theoretical framework explains the process of school facility construction. First, school districts follow a process that consists of nine fundamental steps: (1) needs assessment; (2) long-range planning; (3) fiscal planning; (4) school building planning, which includes school-site planning and selection, architectural services, and educational specifications; (5) bidding for contractors; (6) facility construction; (7) occupying the building; (8) postoccupancy evaluation; and (9) school facility use. Second, school districts accomplish these nine steps by coordinating three functions: executive leadership, professional expertise, and representative legitimation. Third, in order for the school district to construct new schools, it is also necessary to relate to external agencies such as the state (for regulation, fiscal allocation, and technical distribution). Fourth, local school district and state officials relate to each other interpersonally as well as interorganizationally. A brief discussion of the historical evolution of school construction is followed by arguments for the importance of school environments and the school structure itself. The conclusion is an indepth review of the nine steps from stage one of the theoretical framework mentioned above. (5 tables and 204 references) (LAP)

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SCHOOL HOUSING FOR THE SCHOOLING OF CHILDREN

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Table of Contents

Factors Affecting New School Housing 5

The Demand for School Housing 6

A Recent History of School Housing 7

Involvement of State Agencies 8

An Examination of Agency Regulations and Practices 9

Implementation of Price-Waterhouse Recommendations 11

Toward A Theoretical Analysis of School Facility Construction 13

The Three Functions 17

Construction Process Steps 21

The Interpersonal Dimensions of Facility Construction 25

Theoretical Framework Summary 27

Historical Evolution of School Construction 29

The School Structure 34

Effective Schools and School Environments 37

Process of Constructing New Schools 41

Step by Step Review of School Construction Processes 44
- Step #1: Needs Assessment 45
- Step #2: Long-range Planning 48
- Step #3: Fiscal Planning 50
  - Local Taxation Options 53
    - General Obligation Bonds 53
  - Developer Fees 55
  - Special Taxes 55
  - Anticipation Notes 56
  - Mello Roos 56
  - Lease-purchase Agreements 57
  - Municipal Leasing 57

LeRoy Greene Purchase-Agreement 57
Certificates of Participation 59
Asset Management 59
Sale of Property 59
Tax Increment 60
Joint Venturing 60
Step #4: Educational Specifications Development, Site Selection, and Building Design 62
Educational Specifications 62
Floor Plans 64
Landscaping 65
Site Selection 66
Building Design 67
Selecting the Architect 67
Step #6: Facility Construction 71
Step #7: Occupying the Building 73
Step #8: Post-Occupancy Evaluation 74
Step #9: School Facility Use 77

References 82

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List of and Figures

Figure 1. School Construction and Organizational Functions 17

Figure 2. Linkage to State Agencies 23

Figure 3: School Districts' School Construction Funds Sources 61

Figure 4: School Financing State Agency Involvement 62

Figure 5: Review of the Literature Theoretical Framework 81

SCHOOL HOUSING FOR THE SCHOOLING OF CHILDREN

Introduction

New school buildings are produced through a complex sequence of events. The process begins with the identification of space needs, entails extensive school district planning and organizing, and ends with certification of the completed school. Though the process varies widely from district to district, many different individuals and groups are typically involved. In addition to district staff, state agency officials are always involved. Most school districts involve those who are directly responsible for the planning and construction of the school building. Many districts take pains to involve community leaders and parent groups.

While ideological conflicts and policy debates are certainly not rare, most participants approach school construction as an essentially practical but complex problem. Success in raising funds, securing adequate technical assistance, and winning broad community support are essential to defining needs and completing facility construction. Constructing a school is not simply a school district governance decision; it is the kind of activity which demands public support and district accountability as well as expert and technical knowledge, skill and leadership.

Factors Affecting New School Housing

The complex process of planning and constructing new schools produces much more than physical housing for children. It makes a vital symbolic statement about community values and educational philosophy. This symbolic role makes facility construction one of the most important responsibilities of any local district. Facility decisions have enduring consequences for students and community alike.

A major factor shaping the construction process is the social interaction among district staff and the staff of state agencies with funding and regulatory authority over process. These interactions are shaped by competing educational philosophies and sharply impact on the definition of school housing needs as well as shaping the way construction priorities are perceived and pursued. Since community growth tends to precede school housing construction, construction planning typically unfolds in a stressful and often turbulent environment.

The Demand for School Housing

Historically, school housing construction has been characterized by an erratic pattern of rising and falling demand. According to estimates provided by Bill Honing (1991), the State Superintendent of Instruction, "close to five million students now attend California public schools, and approximately 1.5 million new students will enter our schools during the next five years." State projections (Heydt, 1991) indicate that 1,277 new schools, or over 35,000 new classrooms, will be called for to house expanding enrollment by 1995. Locally, in San Bernardino and Riverside, counties, K-12 enrollments are expected to increase by 91.46 percent and 106.95 percent, respectively (Heydt, 1991).

The ever-increasing demand for fiscal resources to provide adequate school housing has resulted in a number of new state appropriations. Over the last five years, California voters have passed bond issues totaling $950 million. The California Legislature has appropriated an additional $750 million from tidelands oil revenues. Nevertheless, these appropriations are insufficient to meet the burgeoning need. Heydt (1991) estimates that the state will require an additional $12.65 billion to provide adequate school housing for its youth. The California educational system is seriously challenged by the need to generate adequate school housing with scarce resources.

A Recent History of School Housing

The passage of Proposition 13 in 1978 altered the system by which school districts build schools. The Serrano v. Priest (1974) court decision mandating state equalization of school funding had already started to direct financing for school facilities to the state level with the passage of Proposition 13. School districts which had previously financed school construction with local bond money or by borrowing from the state were generally unable to secure the required two-thirds vote from the district voters. The decline in local funding that followed passage of Proposition 13 necessitated legislative revision of the State School Building Lease-Purchase Act so that districts could receive state aid for financing local school construction without having to return funds to the state. Under the revised plan, districts receive "quasi-grants." The state pays for the construction of new school facilities and rents them for a nominal fee ($1 per year plus any interest earned on state construction money) to local school districts under a long-term, lease-purchase agreement. Title to the facilities is transferred to the individual districts not later than 40 years after the rental agreement has been executed.

Involvement of State Agencies

Four state agencies are involved in the process of planning for and constructing new schools; however, no one agency has total responsibility for the process. The State Allocation Board (SAB) is a legislatively appointed body, which was first created in 1950. The board is composed of the Director of Finance, the Superintendent of Public Instruction, the Director of General Services, two senators and two assemblymen. This body's responsibilities are to receive all applications for state funding from local districts and to make the final allotments.

The Office of Local Assistance (OLA), located in the Department of General Services, is responsible for processing these applications and bringing recommendations for fund authorization to the SAB. The Office of the State Architect (OSA), also located in the Department of General Services, is responsible for school design and architectural integrity. OSA assures that plans meet building code requirements, are earthquake safe, comply with space authorization limits, and meet other technical specifications. The California State Department of Education's School Facility Planning Division (CSDE/SFPD) reviews building designs to determine whether they meet educational soundness criteria. The unit assures a proper mix of classroom, laboratory, and other learning environments, as well as a balance between instructional and non-instructional components. All school construction approval, regardless of funding source, necessitates school district interaction with the CSDE/SFPD) and OSA. These agencies enforce compliance with a wide variety of procedural and planning requirements.

An Examination of Agency Regulations and Practices

The process required to construct school facilities has evolved into a system of regulations and requirements imposed by the four state agencies. In response to school district's complaints about the ever-increasing complexities and delays, the California Legislature commissioned the accounting firm of Price-Waterhouse (1988) to investigate the California school construction regulations and practices and recommend ways to simplify and accelerate the process. The Price-Waterhouse firm based its study on the premise that the ultimate goal for the state is to fund adequate school facilities where and when needed. The report's explanation for apparent delays and complexities in the building of new schools focuses attention on the differences between state and local district interests.

The state's agenda for school construction has five characteristics: (1) maximizing the number of basic or simple school classrooms that can be built from available funds, (2) making facility construction a last-resort option after maximum use of existing and temporary facilities has been assured, (3) maximizing the amount of local funding made available for all projects, (4) minimizing the risk that "unneeded" projects will be approved, and (5) minimizing the risk that a variety of state policies will be violated due to school district negligence or abuse.

Local school district interests have four characteristics. Two of these are directly at odds with state interests--(1) maximizing the amount of state funding, and (2) minimizing district contributions to facility construction. The other two local interests, though not directly at odds with state priorities, complicate the local/state relationship--(3) building facilities that respond to local requirements and (4) avoiding community conflicts over site selection and use of surplus schools.

The differences between state and local agendas are reconciled through three mechanisms used by the state to shape construction of school facilities. First, the state regulates the process by which schools are planned and constructed. Second, it establishes priorities and funds school design and construction work. Third, the state provides a variety of support services aimed at helping school districts deal with planning and compliance problems.

The reconciliation of state and local agendas is problematic, however. The Price-Waterhouse report identified three major obstacles to efficient planning and construction of school facilities. The first obstacle is the fragmented structure displayed by the state. The CSDE/SFPD, OSA, OLA, and SAB are each responsible for a different policy area (educational policy, building safety, and efficient use of limited financial resources, respectively). The second obstacle is the administrative weaknesses within the state agencies. Chief among these weaknesses are: a lack of formal internal operating policy and procedures manuals in all offices at the state level, lack of adequate computer support, which exacerbates problems related to document control and filing systems, lack of adequate application and workload monitoring systems, and cumbersome property check procedures. The third obstacle identified by Price-Waterhouse is administrative weaknesses at the school district level. The report underscores the importance of insufficient advance planning by districts and a shortage of qualified project managers.

Implementation of Price-Waterhouse Recommendations

Based on their findings, Price-Waterhouse made several recommendations that were intended to strengthen OLA; redirect the CSDE/SFPD to training, planning, and research activities; and direct OSA to provide school districts with estimates of how long the approval process should take for a low-cost plan, a medium-cost plan, and a high-cost plan.

Responses to the Price-Waterhouse report and recommendations, were described in an SAB report (SAB,1989). Of the nine recommendations made to OLA, seven were immediately implemented. The remaining two -- replacing the traditional method of projecting enrollments with an alternative method (counting teaching stations) and using standardized building plans to conserve architectural development and plan review resources -- were later approved by SAB and implemented.

Five of the nine Price-Waterhouse recommendations were directed toward CSDE/SFPD. CSDE/SFPD concurred with two: (1) elimination of the five-year plan requirement from the application process, and (2) shifting CSDE/SFPD focus to overall facility planning, development of training materials and programs for district personnel, and conducting research and evaluation studies of state programs' impact on school districts. It did not concur with the recommendations to eliminate the the plan review and approval steps from the application process, and the elimination of the site acquisition review and approval step. CSDE/SFPD did, however, suggest an alternative provision to these recommendations. Instead of providing consulting and training through six regional offices, the CSDE/SFPD proposed establishing educational facilities planning centers operating in cooperation with one or more of the state colleges or universities.

This recommendation would have created the equivalent of the School Planning Laboratory located at Stanford University between 1950 and 1977. That laboratory, as part of the Stanford School of Education, studied such topics as: building, furniture and equipment design, space utilization, facility maintenance, business management, learning environments, and population projections. Until its demise in 1977, the Laboratory published research findings and provided technical assistance to local districts (Boice, 1968; EFL, 1967; Palmer, 1975). It had neither formal authority over district construction decisions nor explicit responsibility to state agencies.

The Price-Waterhouse recommendations directed toward the Office of State Architecture emphasized the need for expediting decisions and simplifying and streamlining procedures. Two recommendations to OSA were accepted. OSA agreed to establish separate plan checking turnaround standards and time schedules for low, medium, and high-cost plans. It also agreed to utilize OLA application numbers in conjunction with OLA projects in order to facilitate project tracking. A procedure was adopted to identify OLA application numbers and funding status and to acknowledge these numbers in a letter to OLA.

School district-state agency relationships have been strengthened through the implementation of various Price-Waterhouse recommendations. The focus of this relationship is now more directly on the SAB/OLA funding process. The proposed shift from regulation to support service provision in OSA and CSDE/SFPD did not materialize, however. Both OSA and CSDE/SFPD retain a substantial regulatory emphasis in their relations with local districts. In order to understand the dynamics of state influence, and to interpret the processes of local district facility planning and construction, a comprehensive literature review was undertaken. A theoretical framework for synthesizing that literature is presented in the next section.

Toward A Theoretical Analysis of School Facility Construction

Analysis of the available literature on School Facility Construction is driven by two questions. First, what tensions tend to develop among the key actors at various steps during the processes of design, construction and school building occupancy? Second, what are the typical conflicts of interest in orientation, separating executive leaders, professional experts, and political representatives participating in these processes?

The traditional means for addressing the issue of school housing has been to determine how school facilities are built as the need arises. Since neither public nor professional interest has been high except during periods of acute facility shortage, the literature tends to reflect the most common and obvious elements. According to the 18th Annual Gallup Poll (1985), only one percent of the respondents considered lack of proper facilities as a problem facing the schools. There was virtually a total lack of interest in school facilities among the numerous school reform reports generated during the 1980's (Council of Educational Facilities, 1986). John Goodlad's A Place Called School (1984), for example, has no references to the physical facilities. Theodore Sizer in Horace's Compromise (1984) makes oblique reference to facilities in the assertion that "human factors" rather than physical ones shape the climate of the school.

Three reports address the issue of school facilities. Ernest Boyer's High School: A Report on Secondary Education (1983) briefly discusses school facilities in a number of places. For example, in his description of Ridgefield High School he writes about " the two-story brick building built in the 1930's now showing its years and lack of care" (p. 11) and urban schools "with wire-covered windows and graffiti-covered walls" (p. 16). The Carnegie Report (Tucker & Mandel, 1986) recommends schools abandon the traditional "egg-crate" approach to classroom construction, and the National Governors' Association Report (Alexander & Keen, 1986) discusses technical assistance for school districts. The latter report specifies that building programs, year-round schooling, and the establishment of policies for the disposal of obsolete buildings, as well as construction, restoration, and multiple use of school buildings be part of their deliberations.

It is evident that school building construction is a multi-billion dollar business. Leu (1965, p. 1) estimates, "The value of our existing school plans is roughly estimated to be four times the assets of our nation's largest corporation." The demand for additional school housing is rising at the same time that procedures for funding and constructing are becoming more complex. As a result, it is increasingly important that the processes involved in the construction of schools be examined and understood.

Four key ideas form the foundation for the theoretical framework to be used in this review. The first idea borrowed from Herbert Kaufman's (1956) work emphasizes the characteristic form and persistent tension among three basic governmental functions: executive leadership, professional expertise, and representative legitimacy. As the literature review unfolds, the influence of these three core governmental functions on the state and local educational officials will be apparent.

The second idea needed to form an adequate theory of school facility development is the recognition of stages or steps in the school facility planning, construction and utilization process. The framework developed in this report delineates nine distinct steps in the process and describes how the executive, professional, and representational functions differ as facility development moves from one step to the next.

The third basic idea incorporated in this theoretical framework was provided by Theodore Lowi (1911, 1979) who reported the critical differences between "regulatory," "distributive," and "redistributive" governmental policies as they affect the actions of local officials and ordinary citizens. The school facility planning and construction process is conditioned by the state-local relationships which may be based on the regulatory authority of the state or the redistributive effects of technical or other types of support.

Finally, the school housing development process requires attention to the character and impact of interpersonal relationships that develop between the local school district officials and the various state and local agency leaders as they interact with each other. The structure and operations of the school housing construction process in California creates interpersonal tension between the local school staff and the state officials as local officials seek fiscal aid and procedural approval. Concepts from Goldberg (1983) are useful in describing the interorganizational tensions, and concepts from Walton (1972) and Evan (1972) present the interpersonal dilemmas facing school district officials. Vertical interdependence (Goldberg, 1983) places school districts in a dependent relationship with state agencies. The instrumental and expressive meanings (Walton, 1972; Evan, 1972) which the school officials and state agency officers bring to the interaction create identity conflict for school officials. They resolve this conflict by avoiding the interaction. Figure 1 shows the relationship between the first two key ideas in the theoretical framework developed for this report.

Figure 1. School Construction and Organizational Functions

Steps	Executive	Professional	Representative
1. Needs Assessment	Initiative	Demographic Analysis	Recognition
2. Long-Range Plan	Organization	Advisory	Legitimacy/ Direction
3. Fiscal Plan	Decision Making	Technical Assistance	Mobilize Support
4. Building Design	Integration	Technical Assistance	Preference/ Representation
5. Contract Bidding	Authorization	Expertise	Legitimation
6. Construction Management	Supervision	Technical Supervision	Approval/Support
7. Occupy Building	Leadership	Administration	Support
8. Evaluate Building	Judgement	Inspection	Accountability
9. Building Use	Negotiation	Advice	Advocacy

The Three Functions

The columns of Figure 1 distinguish among the three competing functional values outlined in Herbert Kaufman's (1956) essay. Representativeness relates to the adequacy with which all legitimate interests are incorporated into the scope and content of public service programs. Neutral competence is "to do the work of government expertly, and to do it according to explicit, objective standards rather than to personal or party or other obligations and loyalties" (p. 1060). Executive leadership is the degree to which an organization is assured that coordination systems and service operations are capable of critical task performance in a timely and cost-efficient manner.

Kaufman (1956, p. 1057) writes, "Each of these values has been dominant (but not to the point of total suppression of the others) in different periods of our history; the shift from one to another generally appears to have occurred as a consequence of the difficulties encountered in the period preceding the change." To illustrate, the first third of the 20th century gave rise to a political system when the dominance of representativeness as a criteria for public service organization and delivery resulted in "bossism" in local government. Political bosses "while providing a measure of integration in the bewildering pullulation of government, often utilized their positions to advance their personal interests and the interests of the organizations they headed without regard for the interests of many of the governed" (Kaufman, 1956, pp. 1059-1060). As disillusionment with the bossism of overdeveloped representative systems increased, a movement to remove the politics from the process and replace it with experts took place.

Unfortunately, when control is turned over to politically neutral, professionally competent experts, the decision-making process becomes fragmented, and agencies begin to pursue contradictory policies in related fields. The neutral competence function "...create[s] a thrust toward fragmentation of government, toward the formation of highly independent islands of decision-making occupied by officials who [go] about their business without much reference to each other or to other organs of government" (Kaufman, 1956, p. 1062). Strong executive leadership is needed to bring this problem under control. Throughout history the reformers turned to the chief executives to rationalize the spending process, and out of it came the now familiar phenomena of executive review and adjustment of agency requests and the submittal of comprehensive budgets delineating overall spending patterns (Kaufman, 1956, p. 1064). As officials and agencies become more accomplished in their respective areas of specialization, however, they tend to resent efforts of "laymen" and "amateurs" to exercise control. Thus executive domination weakens representatives along with corralling the experts. The result is a contest over the limits of executive authority.

Applying Kaufman's (1956) analysis of the interrelation of functions in the field of public administration to the processes of planning for, building, and opening new school facilities, it appears evident that it is natural for officials representing each of the three basic functions to experience tensions and conflict regarding who should have ultimate control over various steps in the process. It is inevitable that some individuals with responsibility for either representative or neutral competence functions will step forward to challenge the authority of the executive and attempt to assume some of the executive's responsibilities and that some executives will relinquish power to them. Smooth and efficient completion of tasks and transition from one step to the next in the planning and building process require that the three competing functions become integrated and maintain an appropriate balance in their respective domains. To ensure stability and consistency, the executive function will permeate the entire planning, construction, and opening process. The representative and neutral competence functions operate when called upon by the executive. They move in and out of the various steps performing their appropriate tasks.

The executive function is usually carried out by the superintendent, associate superintendent for business and/or a facilities planner. This executive assumes responsibility for the total planning and construction operation, including such activities as: coordination of policies across fields and agencies, the designation of jurisdictional spheres, determination of areas of service and regulation, and supervision of activities across areas.

The representative function is fulfilled by the school board, community representatives, and the leadership of educational organizations and other interested parties. Formally, the school board, representing the community, presents input to school district executives, certifies the need for new facilities, and approves the process by which the facilities are to be built. Special interest group representatives provide input to the board or directly to school district executives in order to have their desires incorporated into the process of school construction.

The professional function is fulfilled by various specialists and experts with specific technical legal, and fiscal knowledge. Persons who fill this role include: architects, contract lawyers, engineers and educators. As an example the architect designs the buildings, but educators specify the details which serve to insure that the building is a school. The lawyers provide legal assistance, in contract and bidding procedures. Engineers provide technical assistance, such as installation of utility and communication lines.

Construction Process Steps

Shown in the rows of Figure 2 are the nine distinctive steps involved in planning and constructing new school facilities. These steps are:

1. Assessment of demographic changes and facility needs.
2. Long-range planning for new facilities.
3. Fiscal planning for provisions of resources and financing construction.
4. Site selection, development of educational specifications and design of architectural features for the planned facility.
5. Development, bidding, and letting of contracts for facility construction.
6. Construction of the building.
7. Occupying the building through staffing and programming.
8. Post-occupancy evaluation of building and securing of needed alterations.
9. Facility utilization.

These nine specific steps constitute the process of constructing and occupancy of a new school. Depending on the various analysts' frames of reference, these nine steps are sometimes condensed into as few as three (Englehardt, 1970) basic activities or a much broader set of stages. The Price-Waterhouse Report (1988) identified fifty-four separate steps in the process. As explained above, the nine steps delineated here remain distinct because each step requires a different configuration of the three organizational functions. The specific content of these nine basic steps and the extent to which each has been the object of significant school construction research will be reviewed in the main body of this report, following a brief sketch of the history of school construction in America. (See page 23).

Interpreting State-Local Relationships

School construction is not performed autonomously by the local school districts. They must cooperate with and be accountable to many external agencies. State agencies are ultimately responsible for adequate school housing. These agencies regularly interact with local district officials in authorizing, designing, and financing school facilities. As noted earlier, in California the four state agencies are: the State Allocation Board (SAB), the Office of Local Assistance (OLA), the California State Department of Education/State Facilities Planning Division (CSDE/SFPD), and the Office of the State Architect (OSA).

As suggested by the entries in Figure 2, relationships between the four prominent agencies and local district officials can be described by applying Theodore Lowi's (1964; 1979; 1978; 1985a; 1985b) concepts: regulatory, distributive, and redistributive. Without distorting Lowi's original concepts, the more meaningful phrases "support" and "fiscal" will refer respectively to Lowi's distributive and redistributive categories. This is useful in this context because the state agencies have no independent sources of money. They can only provide resources through taxation or the diversion of funds from other purposes. The fiscal allocations are thus redistributive. Lacking money to distribute, agencies may distribute technical or symbolic support.

Figure 2. Linkage to State Agencies

Process	SAB (OLA)	OSA	CSDE
1. Request for Application	Regulatory		Distributive
2. Approve Application	Regulatory Fiscal		Distributive
3. Approve Fiscal Plan	Regulatory Fiscal		Distributive
4. Approve Site, Design, & Specifications	Regulatory	Regulatory	Regulatory Distributive
5. Approve Bid	Regulatory		
6. Award Contract	Regulatory Fiscal		
7. Occupy Building			Distributive
8. Evaluate			Distributive
9. Building Use			Distributive

According to Lowi, (1964; 1979; 1978; 1985a; 1985b) whenever public policy actions are primarily concerned with imposing procedures or controlling specific actions, they define the state-local relationship as one which is primarily "regulatory" in character. In the case of school construction, this regulatory relationship confronts local districts with demands for adherence to rules, regulations, procedures, and standards. When state agencies use the taxing authority of the state to raise money for particular local projects, the relationship is redistributive, that is money is taken from some taxpayers to be put at the disposal of others.

The third state-local relationship takes place when state authority is used to give local districts access to resources not raised through taxation. While Lowi emphasized allocation of public land and resources, his "distributive" concept applies to state offers of authoritative legitimacy, technical assistance or symbolic support to various local projects. State support for local action and initiative plays an important role in encouraging and directing local district facilities development. The term "symbolic" support is used here to characterize state initiatives that encourage local direction without redirecting public resources.

Though regulatory and fiscal policies differ, they share one characteristic between them, the use of coercive power to assure compliance with their intent. State agencies through direct sanctions employ coercive power to control school district facility construction activities. Tax and bond money raised from the general tax-paying public is allocated to school districts when they meet specific criteria and follow complex, often convoluted procedures.

In schooling, as in other policy arenas, the sequence is as follows:

> A program is authorized and an administrative agency is put into operation to work without legal guidelines through an elaborate, sponsored bargaining process in which the broad area monopolized by the government [state] is given back piece by piece as a privilege to specific individuals or groups [local school districts] on a case-by-case basis (often called "on the merits"). (Lowi, 1979, p. 278).

The third link between the state and local school district fits the pattern described by Lowi as "distribution" policies. The state has control over an abundance of information and is able to provide benefits to specific clientele, the school district, during the planning and construction process. Because the state is able to provide such services, the district is inclined to adopt a dependency relationship and seek symbolic legitimation as well as information and technical support services (Lowi, 1964; 1985a; 1985b; Lowi & Stone, 1978; Dunham & Marmar, 1978).

During the first six steps of the school facilities development process, the relationship between districts and the state tends to be dominated by regulatory and fiscal concerns. During steps seven through nine, the relationship tends to shift toward the symbolic legitimation and technical support forms of interaction. Supportive relationships often develop during the earlier steps especially if local districts nurture the relationship by actively pursuing information, training services, advice and approval.

The Interpersonal Dimensions of Facility Construction

The relationship between the school district and the state agencies is conducted at two levels: interorganizationally and interpersonally. Interorganizationally, the relationship is vertically interdependent (Goldberg, 1983; Pennings, 1981; Pennings, 1978; Pennings & Goodman, 1977). Vertical interdependence exists among organizations which are located at adjacent stages of a production process (Goldberg, 1983, p. 108). The magnitude of this relationship is "a function of the substitutability and criticalness of the resources involved. Criticalness refers to the importance of the resources in the sense that discontinuation of their flow would impede the focal organization's functioning"

(Goldberg, 1983, p. 109). As state control over facility construction financing has increased, vertical interdependence between local districts and the state agencies has also gone up. Moreover, vertical interdependence is most prominent in the relationship between districts and the SAB and OLA, the agencies with direct fiscal control.

The interpersonal aspects of this relationship also need to be understood, however, in order to present a complete picture of these working relationships. On most issues, interorganizational interaction involves only a part of the personnel. Interactions among the individuals involved take on both instrumental and expressive meanings (Walton, 1972). Instrumentally, bureaucratic procedures are developed and controlled by the state. At the expressive level, procedures are evaluated and credit or blame is allocated by participants to various staff or to the agencies themselves. Since the district staff are at greater risk (failure to secure resources or authorization is highly traumatic for the district staff), they also tend to greater expressive reactions to these transactions.

The institutions possess identities, statuses, or images which their members want to establish or maintain. The individual interpersonal relationships may reinforce that identity or may cause identity conflict. In the case of identity conflict, avoidance of the interaction may take place (See Evan, 1972). Successful engagement in a social relationship depends on creating and sustaining a "definition of the situation" which gives a reasonable account of motives and actions. The "situation" in which individuals from the school district interact with individuals from the state agencies is one of vertical interdependence between the two, an interdependence in which the school district personnel are cast in a subordinate role. Incongruently, the individuals involved typically occupy hierarchically important positions in their own organizations, making this dependency relationship doubly uncomfortable. The result is the tendency to redefine the situation in formalistic ways, with the individuals relating to each other in instrumental rather than expressive ways. When expressive communication does emerge, it is likely to reinforce identity conflict and encourage school officials to avoid further interaction.

One typical avoidance strategy is for senior school district officials to delegate their responsibilities to lower ranking support staff members. This relieves expressive conflict, but threatens the clarity and timeliness of communication.

Theoretical Framework Summary

The theoretical framework for analyzing school facility construction processes can be summarized in four key ideas. First, school districts follow a process which consists of nine fundamental steps: (1) needs assessment; (2) long-range planning; (3) fiscal planning; (4) school building planning which includes school site planning and selection, architectural services, and educational specifications; (5) bidding for contractors; (6) constructing the building; (7) occupying the building; (8) post-occupancy evaluation; and (9) school building use.

Second, school districts accomplish these nine steps by coordinating three functions: executive leadership, professional expertise, and representative legitimation.

The executive function provides procedural order and allocation of resources. The professional function provides specialized and expert knowledge and skill. The representative function balances attention between special interests and the common good. Each operational function resolves specific problems during each of the nine steps.

Third, in order for the school district to construct new schools, it is also necessary to relate to external agencies such as the state. The bases for this relationship is threefold: regulation, fiscal allocation, and technical or symbolic support distribution. The regulatory relationship is based on adhering to rules, regulations, procedures, and standards imposed by the state. The fiscal relationship is based on state control over design and construction funds. The support most often sought from the state agencies is symbolic.

The state-local relationship is focused on four separate agencies: (1) the State Allocation Board (SAB), (2) the Office of Local Assistance (OLA), (3) the California State Department of Education School Facilities Planning Division (CSDE/SFPD), and (4) the Office of the State Architect (OSA). The district's basis for relating to SAB and OLA is largely regulatory and fiscal, although technical assistance is also sought. The district's basis for relating to OSA is almost entirely regulatory. The district's basis for relating to CDE/SFPU tends to be regulatory, but often includes the distribution of technical and symbolic support.

Fourth, local school district and state officials relate to each other interpersonally as well as interorganizationally. The interorganizational relationship creates vertical interdependence (Goldberg, 1983). As a result, interpersonal relationships tend to be pushed toward instrumental communication with substantial negative expressive meanings. Since the quality of the interaction for school district personnel is instrumental, actual communication tends to be assigned to lower ranking staff members.

Historical Evolution of School Construction

> In its origins, the school was almost everywhere an unspecific place, without any special facilities. ...[T]he school building was a community centre for public meetings, celebrations, lectures and even private gatherings. ...It is only gradually that that function became dominant to the exclusion of the other functions (Organization for Economic Cooperation and Development, 1978, pp. 12-13).

School buildings did not become the objects of interest to architects until the middle of the twentieth century (Castaldi, 1987). The historical development of school buildings can be traced through three periods in history starting with the Hellenistic Era. There was some development of church grammar schools in Italy, France, Germany, and England during the fifteenth and sixteenth centuries but the school buildings were not of interest to architects nor were they designed by them.

The second phase of this development was in the early American and Post-Civil War period. Castaldi (1987, p. 13) reports, "they were simply shelters in which pupils and teachers might come together." During the Post-Civil War period, "the design of the ordinary school building took no account of its nature or various functions. The solution adopted was nothing but an addition of classrooms, one exactly like the others" (Roth, 1957, p. 13). The third phase was the twentieth century. Architects, during this period, have become key players in school design. So much so that today's schools are increasingly celebrated as architectural works of art (AASA, 1986).

The first schoolhouse built in the United States in the 19th century was adopted from the British model. The schoolhouse measured 50 x 100 feet and this design remained common in the United States between 1806 to about 1840.

In 1847, the Quincy School consisting of more than one room was constructed in the city of Boston. The design was described as the "collection of boxes" or the "egg crate" arrangement. This plan influenced school design for a century or more.

The second half of the 1800's brought about significant changes in school buildings. Horace Mann and Henry Barnard established the principle of form and function that resulted in specifying buildings as schools. Pestalozzi's ideas: (1) education at school is a continuation and extension of parental education; (2) the classroom and school should provide the child with security and intimacy similar to that in the home; and (3) the environment of both the school and home forms a vital part of the child's education, influenced school building (Roth, 1958). The architectural response to his theories on learning was to increase the size of the building and add an auditorium and a Greek Revival or Victorian Facade to the Quincy design of elementary schools.

Eveleth (1870; 1978) converted Victorian house types into schools. The significance of this activity is that the "house as a school concept is important because the symbolism of the house is mankind's most primitive architectural idea" (n.p.).

Eveleth cited examples by stating that all important civic buildings are founded on the symbolism of the house and most retain the word, such as, schoolhouse, courthouse, jailhouse and firehouse.

In 1873, the addition of kindergarten and secondary schools contributed more changes. The American public high school followed the Kalamazoo Court decision of 1874. This court decision established the right of local school districts to construct and operate high schools at public expense. Cupolas, parapet walls, high ceilings, excessive ornamentation, and central fan heating systems were characteristics of these schools (Leu, 1965).

The first half of the 1900's saw schools grow in number, size, and variety. Frank Lloyd Wright's Hillsdale Home School in Spring Green, Wisconsin, done at the turn of the century and Dwight Perkins' Carl Schurz High School in Chicago in 1910 were two schools built to relate design to learning theory. (See Cost of a Schoolhouse, 1960). By 1917, the federal government was providing substantial support to both vocational and physical education facilities at the secondary school level.

The earliest work in this field, School Architecture or Contributions to the Improvement of Schoolhouses, (1848) illustrates the manner by which the study of school facilities has been traditionally reported. Henry Barnard as a specialist in the construction of school buildings presented his ideas to various groups and eventually wrote each of the presentations organized into two major themes. The first was to present a review of various states' schoolhouses. The second was to present schoolhouse plans as recommended by many educators such as Alcott, Mann and

Emerson. Another standard which was presented was for schools to provide an occasion for the formation of manners, morals, and intellectual attainments. (See McClintock, 1970, p. 19). Barnard also established that the "schoolhouse was a work of architecture to the degree that the building itself enhanced the school's performance of its cultural task: to be an emblem for its pupils of high ethical and rational standards" (McClintock, 1970, p. 19). A central question in examining schoolhouses during this period was: What would children learn from the schoolhouse? The architect, in this case, was to be primarily concerned with the cultural rather than the physical attributes of an edifice.

American Schoolhouses (Dressler, 1911) is the original guide used for building school facilities. This work established the standards for lighting, health, and sanitation. George D. Strayer and N. L. Englehardt of Teachers College, Columbia were instrumental in setting up these standards that were widely adhered to between 1920-1930.

In 1921, Samuel A. Challman of Minnesota, Charles McDermott of New Jersey and Frank H. Woods of New York met in Atlantic City to discuss the formation of an organization to deal with the issue of school plant planning and construction. From this meeting the National Council on Schoolhouse Construction was founded. The council's purpose was to promote the establishment of standards for school buildings. These standards included expenditure limits, design style, use of space, and safe, healthy conditions. In 1967, the National Council on Schoolhouse Construction changed its name to The Council of Educational Facility Planners, and in 1971 International was added.

In 1927, the California State Legislature requested the State Department of Education to establish a division to monitor school construction within the state. The main arguments for establishing a division of Schoolhouse Planning were: (1) to prevent waste in school construction, (2) to improve the health and safety of pupils, and (3) to make the school facility appropriate for educational needs.

Between 1933 and 1937, the U. S. Government, through the Public Works Administration, became involved in financing school construction. During the 1940's, Europe, Canada, and the United States moved to develop state, federal, and provincial building standards.

Between 1937-1947, the California Division of Schoolhouse Planning was associated with many changes in the design of school facilities and in the method of planning and financing them. In 1949, the State of California introduced and implemented a program to allocate state funds to school districts of low financial ability. The program was intended to insure that every pupil was provided a minimum of classroom space in order to meet his/her educational need. As stated earlier, the California legislature, upon the first appropriation in 1950, then, established a State Allocation Board to control the program and to make the allotments. The Office of Local Assistance was subsequently established.

A change in school design took place during the 1950's when the "Quincy Box" design was changed to a single-story, rambling school design. This design featured cluster, finger, and campus plans. New construction materials were also used. Glass, concrete, steel, new furnishings, and teaching aids contributed to the changes. Recreational and athletic facilities became standard.

During the 1960's, diversity in school design took place. Open spaces, flexible scheduling, carpeting, air conditioning, movable walls, pods and team teaching necessitated new designs. Several construction systems emerged. In the 1970's, the changes were prompted by enrollment declines, energy conservation needs, and career education emphasis on community-based school programs. The 1980's focused on ensuring that facilities responded to programmatic needs. Flexible facilities were encouraged to accommodate future programs. (See Council of Educational Facility Planners International, 1985; AASA, 1971).

The School Structure

Generally speaking school facilities are so expensive that districts limit construction to the minimum facilities required to accommodate immediate student requirements, and to put off construction as long as possible (Brubaker, 1985). As a result, schools tend to be built to meet housing rather than instructional needs. District officials respond more readily to enrollment increases than programmatic needs. When building programs are undertaken in response to enrollment pressures rather than to meet programmatic needs, there is a danger that the cultural meaning of the school's physical plant will be lost. When a school plant acquires the culturally significant status of a "school" as distinct from being merely a "building" it becomes an active part of the educational program, serving a "staging function" in support of the learning process (Birch and Johnstone, 1975, p. 14). MacConnell (1975) refers to this symbolic function of the building when reporting that schools have long been considered only as places where school is "kept" and have only recently come to be seen as places that can directly support or inhibit student learning.

When school facilities are built for instructional purposes, they serve as "symbols of community cooperation for the welfare of children and youth" (AASA, 1941, pp. 5, 20; 1971). The structures stand for many years as symbols of the degree to which communities are willing to put their trust and faith in the leadership of educators and policy makers. If rapid enrollment increases, or new instructional and building construction technologies create a demand for new school facilities, building programs have to balance long-term community symbolism against immediate design and construction needs (Mills, 1976).

The level of community regard for school buildings can be gauged by whether they are seen as "temples" filled with artifacts of their time or merely as "utility buildings" housing classroom operations (Burlingame, 1984). Burlingame sees contemporary school buildings as cultural statements made by educators and the community, much as Greek statuary and Roman buildings captured the spirit of their own era. As a result, he insists, it is appropriate to compare libraries with gymnasiums, or to analyze the characteristics of classroom and laboratory spaces, carpeting, paved parking lots, playgrounds, special offices and lounges for teachers, in order to ascertain what various eras or communities are expressing about the character and nature of schooling.

Some observers assert that the main function of the school building is creation of an appealing and supportive environment for learning (Birch and Johnstone, 1975). Beyond capacity and protection from the elements, these observers draw attention to movement, comfort and esthetics as factors influencing student and teacher responses. From this perspective, school plans are judged by comfort and excitement, as well as cost, ease of maintenance and safety. Sound architectural designs proclaim school and community identity as well as creating pleasant and comfortable spaces for teaching and learning.

The foregoing discussion shows that school facilities have become important architectural objects, invested with substantial community values and meanings. But what evidence is there of actual impact on learning? Taken as a whole, the literature on school structures divides the effects question into three parts:

1. To what extent, if any, do school buildings facilitate or inhibit learning?
2. To the extent that physical facilities have potent effects, do these effects support all educational programs equally, or do various building designs favor particular forms or approaches to education while ignoring or inhibiting others?
3. To the extent that building structures affect learning does that effect depend on community involvement, trust and respect, or is it a direct consequence of building design, maintenance and technical sophistication?

Effective Schools and School Environments

A small group of research studies have examined the overall link between school facilities and educational performance. Evidence from these studies is mixed, though conclusions are often presented as unequivocal.

Smith and his colleagues (Smith and Keith, 1971; Smith, et al., 1988), for example, document the process by which a new school facility became neglected and aged, and how this change affected the performance of faculty, staff, and students. Two separate studies reporting on the same facility fifteen years apart report a strong linkage between performance and school facility quality. From this work one is reminded of Churchill's quote, "We shape our buildings, but thereafter they shape us" (Leu, 1965, p. 95).

By contrast, Phi Delta Kappa, (1980) shows how the process by which school buildings are prepared for students and staff may differ qualitatively. This report, however, finds no evidence that the physical plant characteristics are associated with outcome measures. In the West Vigo Elementary School case, for example, a rather negative process included little community and staff involvement, a highly controversial choice of building style by the educational planning staff, a move into the building carried out with no pre planning by staff, teachers and students and a controversial designation and selection of a principal that occurred just two weeks before the move. In contrast, the same study described the Mary W. French Elementary School which portrays a positive process. First, the voters approved the issuance of bonds for upgrading the quality of the district's school buildings. The upgrading included new construction, reconstruction, and the closing and/or razing of several existing schools. The parents believed the decision to renovate French School was symbolically significant. The staff involved in the move described it as cooperative and collaborative. They also perceived the school as a warm, friendly building. The parents and faculty were pleased that the architects retained the integrity of the school by preserving the old ceilings and other special effects.

Miskel and Ogawa (1988) review this part of the school effects literature within the larger context of works dealing with "organizational ecology". This term is not commonly used to discuss school issues, but is useful in linking facility research with the broader issues of school climate and ethos (See Taguiri, 1968).

A few studies have reported on the link between school ecological elements and educational outcomes. The findings are diverse. Three studies (Weber, 1971; Rutter, et al., 1979; and the 1980 Phil Delta Kappa study cited above) find no significant link between physical facilities and student performance. Weber studied the relationship between the age of four traditional "egg-crate" school buildings and reading achievement among inner-city children. Within this narrow band of variation, he concluded that successful schools do not require outstanding physical facilities. This study is of limited value due to the similarity in design and age of the buildings studied.

Rutter, et al. (1974) tested the impact of building age, decoration and upkeep on student achievement, attendance, behavior, and delinquency. The buildings in Rutter's study ranged in age from ten to over a hundred years old, but they also found little difference in school function. The exception to this general conclusion was for split-site schools that did seem to have better results with student behavior and delinquency. Perhaps the split-site schools with buildings dispersed and closer to the clientele are more responsive to local cultures and student values.

Four studies report a positive link between facility conditions and student learning. McGuffey (1982) comparing the Quincy Grammar school constructed in Boston in 1848 and other modern schools, showed that building age has a statistically significant impact on school achievement (p. 274). Attitude and behavior differences were significant in favor of the newly modernized buildings. His two general conclusions were that (1) obsolete and inadequate school facilities detract from the learning process whereas modern, controlled physical environments enhance it, and (2) facilities may have a differential impact on the performance of pupils in different grades and for different subjects (p. 276). Plumley (1978) reported similar findings in an earlier study. There was a significant inverse relationship between student achievement and the age of the non-modernized buildings.

A survey study reported by Karst (1984) asked teachers and pupils to rank school facilities superior to inferior. He found that as quality declines, the differences between perceptions of teachers in the good facilities compared to teachers in the poor facilities increase. Pupils varied significantly in their user attitudes as building quality declined. Pupils were more likely to evaluate their schools as the researchers did than were teachers.

Hawkins and Overbaugh (1988) conducted a comparative study between American and Japanese schools. They found that when the school building is a reflection of the community, increased learning will take place. The facility needs to accommodate a variety of individual learning styles. The school building aids learning when it readily meets the user's needs. The interface between facility and learning occurs when communication is fostered.

Bowers and Burkett (1988) report their findings of a comparative study looking at a modern school building and an older school building. The students in the modern building scored significantly higher in reading, listening, language and arithmetic than did students in the older structure. Students in the modern facility were disciplined significantly less frequently, had a significantly higher attendance record, and better health than students in the older building.

Some additional evidence of facility impact comes from school climate research. Reviews of this research indicate that physical facility size is the characteristic most likely to affect schooling (Anderson, 1982; Duke and Perry, 1978; Flagg, 1964; Miskel and Ogawa, 1988; Morocco, 1978; New York State Department of Education, 1976; Sinclair, 1970). Smaller schools are more effective in improving behavior, attendance and performance and school appearance is more important than age of building in terms of student impact.

Some studies such as that conducted by Lezotte and Passalcqua (1982) are not clear in their reference to school buildings. Their descriptors of school buildings appear to include school personnel, equipment and materials, rather than the physical facility. Lezotte and Passalcqua write that their findings show that the "school building accounts for significant variance in achievement beyond the influence of prior achievement" (p. 292). Because they are unclear on their term "school building," a review of studies like the above are not included in this report.

While not based on social science research, a West Virginia legal case supports the view that school facility conditions impact substantially on educational quality. In Pauley v. Bailey (1982; 1984) the court found that adequate facilities are necessary for a thorough and efficient system of education. Because the condition of facilities in West Virginia ranged from deplorable to exemplary, the judge ordered that a master plan be developed that would incorporate the standards for a thorough and efficient system of education into all phases of the educational system, including facilities. The master plan was to contain among other criteria, school facility standards which would guarantee high quality facilities to complement the type of educational system called for by state constitution (See Truby, 1983; Pauley v. Bailey, 1982; Pauley v. Bailey, 1984).

Process of Constructing New Schools

While an historical review of developments in research and scholarly analysis of school facilities construction helps put this complex and generally unsophisticated literature into one useful perspective, it is also useful to examine it in relation to the processes involved in planning, constructing, and utilizing school facilities. The remainder of this report summarizes insights gleaned from published reports and scholarly works related to each phase in this process.

School designs, as noted by Birch and Johnstone (1975), link instructional processes with physical space. To successfully make this linkage, planning activities must cover a broad range of technical and educational considerations, ranging from instructional program design through building construction procedures to evaluation of completed facilities (Earthman, 1986).

In most school districts a "facility planner" is formally designated and assigned the responsibility of organizing the planning process (Strevell and Burke, 1959; Castaldi, 1987). The role and status of these persons are directly related to school district size (Kawalski, 1989; Abramson, 1981; Carter and Rosenbloom, 1989; and Davis and Loveless, 1981). The larger the district, the higher the position and status within the organization. It is further demonstrated that the complexity of the process requires additional administrative skills and leadership. Their tasks are to organize faculty, professional personnel, administrators, non-professional personnel and students into two basic planning groups. The first is the executive planning team which has the full authority to develop the plans necessary for building the school. This team consists of the chief school administrator, an administrative assistant, the architect, and educational consultant, a faculty member, a legal advisor, and other school officials such as school board members. The executive planning team reviews all aspects of the design. Since their main duty is to ensure that educational specifications are appropriately integrated into the design of the structure, educational consultants generally play a prominent role on this committee.

The second planning group organized by the facilities planner is the institutional planning team. This team usually consists of fifteen members from a cross-section of professional and non-professional staff. The team's task is to review educational specifications and all architectural plans. It submits reactions and recommendations to the executive planning team as well as serving as a liaison group between the executive planning team, faculty, students, and interested parents (See Castaldi, 1987).

The purpose of including community members in the planning and development of educational facility is two-fold; the district wishes to construct a facility which meets the community's needs and at the same time to encourage future citizen involvement in activities of the facility after it is completed (MacKenzie, 1989, p. 29; MacConnell, 1957). The involvement of citizens has three effects: (1) helps the planning committee to discover many more community needs; (2) convinces citizens that the facility is for everyone; and (3) builds credibility between the planners of the facility and the people that facility is designed to serve. AASA (1971) suggests that a district may encourage community involvement through a process they call "charrette." Charrette is a

> free-flowing, open-ended conclave structured to facilitate communication and expedite decision-making. An educational charrette is a technique for studying and resolving educational facility development problems within the context of total community planning needs. Professionals and concerned parents

> listen to one another; students and teachers tell what they like, want, or do not want; architects and city planners talk with PTA leaders; tax payers whose prime concern is cost-cutting have their say; and interest community members express their concerns (p. 29).

Professionals involved in the institutional planning team typically include an architect, several types of engineers, and other specialists.

Without making a distinction between the professional and executive functions, Jenkins (1985) identifies the work of the educational planner with activities that fit into Kaufman's (1956) concept of executive action: preparation of a master plan for both design and capitol fund raising, drawing up educational specifications, incorporation of these specifications into the building program, providing for project coordination, assuring proper orientation of critical groups and individuals, and undertaking the post-occupancy evaluation. (See California State Department of Education, 1986, for a similar specification of tasks).

Step by Step Review of School Construction Processes

As noted in the theoretical framework section of this report the process of school facility construction is appropriately divided into nine distinctive phases or steps. A review of what the literature has to say about the content and procedures used by school districts during each of these steps is presented next. Each step is summarized in terms of the characteristic activities required as well as the roles played by executive leadership, professional expertise, and political representative agents in guiding the conduct of these activities.

Step #1: Needs Assessment

The first step in the construction of new schools is needs assessment. According to Boles (1969), this is the "getting organized" stage in the construction process. Some general activities performed at this stage include: (1) defining the educational problem, analyzing the problem areas, conceptualizing and designing the plan, evaluating the plan, specifying the plan, implementing the plan, and finally obtaining feedback about the plan (Earthman, 1986); The Council for Educational Facilities Planning International, 1985; Hertz and Day, 1987; Hill, 1986; MacKenzie, 1989). Procedural decisions must be considered, such as how will decisions be made, who will be involved, and when will discussions take place. The district's educational philosophy should be used to justify any request and will be used to formulate long-range goals.

Critical actors who must receive verification of the need for a new school facility include: the board of education, community representatives, the superintendent, regional and state educational officials, plus others. Since many individuals are involved in the construction process, it is important to establish clear communication patterns. Agencies and offices of local, regional and state levels need to be coordinated and kept informed. Maintaining an up-dated list of participants and their roles is an important activity. A task outline should be developed with established goals and deadlines.

Planning resources, personnel, and funds are required to conduct the "getting organized" phase. Usually the planning agents for the school district are the board of education, the administrator, and the district staff. District administrative personnel include persons such as: educator-planner, program specialist, library specialist, operations and maintenance superintendent, business administration and financial analyst. The school site personnel are: principal, teachers, other administrators, instructional staff, support staff, students, PTA and advisory committees, and the community. General educational resources include professional associations, educational consultants, regional, state and provincial education agencies, universities, colleges, and research agencies and institutions.

The technical and legal personnel include architects, engineers, legal counsel, assessment and land agencies, construction manager, contractor, equipment and furniture suppliers, and other technical specialists. The community planning personnel include local planning offices, commissions, and departments, regional planning agencies and commissions, civic departments, local resource bureaus, residential development resources, planning and development consultants, and other local resources. Additional resources reside in the federal government agencies and departments, state and provincial departments, national and international professional associations, and international agencies who provide a variety of information and assistance.

Throughout the needs assessment step, the executive function, usually discharged through the facility planner, involves initiating organizational response to information reaching the district regarding demographic changes, student enrollment increases, and community growth. The professional expertise needed at this stage is primarily concerned with demographic analysis. This expertise, brought by a consulting demographer, a city manager, or school staff member, alerts the facility planner to enrollment increases or new housing development permits requested and approved. The representative function needed at this stage involves formal recognition of facility needs, and the approval of planning resources, such as payment for the services of a consulting demographer. Another instance of representative leadership arises when parents inquire about school facilities for their children.

Executive, professional, and representative functions can emerge strongly or weakly, and may occur in any order. In some instances, one or more functions may be neglected entirely. Before the planning and organizing for the construction of a new school can begin, however, some executive must act. That is, at this stage the executive function is defined by initiative, stimulating organizational response to community change.

These core functions are sometimes contested. The executive, for example, may be preoccupied with other matters, or may not wish to act on information regarding demographic changes and enrollment increases. If this happens, a representative group (such as a minority community member) may enter the process to force the school district to consider building new schools. Professional leadership may dominate the process when, for example, a survey of population changes leads a staff expert to initiate consideration of facility needs. In these special cases community representatives or staff experts take over executive responsibilities - frequently producing confusion or conflict in the school organization.

Step #2: Long-range Planning

The second step in the construction of new schools is long-range planning. A long-range plan takes into account projected growth, limited financial resources, community-based school utilization studies and recent legislative action. (See Blair, et al., 1987, p. 2: Hill, 1987; Lows, 1987). Castaldi (1987), Jenkins (1985), and others (Blair, et al., 1987; California State Department of Education, 1986; Council of Educational Facilities Planners, International, 1985; Day, 1984; Day and Speicher, 1985; Eismann, et al., 1976; Engelhardt, 1970; Leu, 1985; Earthman, 1986) have identified specific tasks required for the development of a long-range plan. The first task is to make an enrollment projection. Information on specific residential tracks is extremely useful in selecting sites for new school buildings and in determining future costs of student transportation. The next task is to conduct building survey covering assessment of the adequacy of existing facilities, calculation of building capacities, and identification of unmet educational needs. From this survey a long-range building plan is prepared for submittal to the school board. Finally, representatives from the community participate in the process. According to most authorities, the best examples of long-range planning are developed by the joint efforts of the community and the school district (California State Department of Education, 1986; Keough and Earthman, 1984; Williams, 1983). As they are completed, new facilities are evaluated and an update to the facilities master plan is prepared (Graves, 1984a, 1984b; Blair and others, 1987).

During the long-range planning stage, the executive function is dominated by the need to organize the complex planning process. It is the executive who determines the time frame for planning, typically a three, five, or ten-year time frame is chosen. The executive also calls on persons and groups needed to provide information and support services for the planning process. The executive leads the process, making decisions regarding form and procedure, and bringing closure to the process.

The professional function enters the long-range planning process on an advisory basis. School site administrators may be called upon to provide information regarding the current condition of their schools and whether or not they can absorb the new growth. Certificated and classified staff may also be called upon to provide information on current changes in educational technology and methodology and building needs which may have an impact on future facility design.

The representative function enters the process by providing legitimacy and direction for the planning process. The school board acknowledges and supports the planning process by reviewing procedures, integrating competing community group demands, and providing formal authority and fiscal support for the planning effort.

Contested control over the long-range planning process often arises when the technical judgment or professional staffers are advanced as finished plans (as when a city manager publishes a five-year plan specifying future school sites and size and design of the structures without first consulting the school district personnel and/or board members). A contest over control may also emerge from representative groups, such as the school board, if planning conclusions are adopted on the basis of interest group priorities rather than executive rationality or expert advise. What is necessary during this step is to have representatives from all three core functions participate, limiting their activities to their roles, in order to insure that the long-range plan focus is on the school district's needs and aims.

Step #3: Fiscal Planning

The third step in the construction of new schools is the development of a fiscal plan derived from the district's capital improvement plan and budget. At this stage the method for funding and financing schools needs to be determined. Sometimes school districts hire financial advisors to provide services. (See Wood, 1986; Alexander and Wood, 1983). These financial advisors consult with architects, engineers, and bond attorneys in the preparation of a financing plan. However, most school districts rely on their administrative staff to determine which sort of financing they qualify for and which is the most appropriate for them to pursue.

School districts have available to them four types of fund sources which may be used for the construction of new schools: (1) state grants and loans; (2) local taxation options; (3) leasing programs; and (4) asset management. Each one of these sources has its advantages and disadvantages and school districts benefit from them differentially. Tapping into the specific source requires interaction with different state and local agencies. In California, the two state agencies which approve all construction regardless of financing are the Office of the State Architect and the State Department of Education School Facility Planning Unit. The State Allocation Board and the Office of Local Assistance deal with the state's lease-purchase agreement school construction funding program. The California School Finance Authority assists when districts seek tax exempt bonds for financing their school construction.

Although there are no federal funds available for school building, there are state funds available for school building. These funds are available in the form of grants or loans. The state of California acquires funds from three sources:

> a.school district "excess" repayments, the amount by which school district principal and interest payments on State School Building Aid loans exceed debt service requirements for state school construction bonds;
>
> b.tidelands oil revenues, an amount of $150 million appropriated annually through 1988-89 used principally for new school construction; and
>
> c.proceeds from state of California bond sales, the amount authorized by voters to raise state funds for school facilities by approving the Lease-Purchase Bonds Acts of 1982 and 1984.

In California, the LeRoy Greene Lease-Purchase Agreement is the most common form of funding school facility construction. Additionally, the California School Finance Authority was created in 1985 by the legislature to provide alternative assistance in school housing. The Authority's purpose is to reconstruct, remodel, or replace existing school buildings which are educationally inadequate or which do not meet current structural safety requirements. It may also acquire new school sites and buildings to be made available to school districts for the pupils of the public school system. Finally, it has the responsibility of assisting school districts by providing access to financing for working capital and capital improvements. The Authority is comprised of the State Treasurer (designated as Chair), the director of the State Department of Finance, and the Superintendent of Public Instruction (See Graves, 1983).

School districts may use a variety of means for raising revenue and for acquiring funds to construct school facilities. Some districts may use current revenue or "pay-as-you-go" financing. This method is usually available to wealthy and large school districts. Some districts are able to set aside each year, money to be used in the future. These funds are called "sinking funds" which the school district subsequently uses to construct the building. This method of financing school construction is not legal in every state (Ambrosie, 1983; Augenblick, 1984; King and Kimbrough, 1982). Some school districts such as Hawaii receive all of their support for facility construction from the state (Thompson, 1988). Others, such as California and Florida receive the major portion of their support from the state. Maryland's school districts are having their dependence on state support for facility construction reduced.

State's school finance formulas differ with respect to support for facility construction. In Arizona, for example, both capital outlay costs and debt service obligations are included in the state's equalization formula. What this means is that less wealthy districts receive higher levels of state aid for school construction resulting in increased state control over the process of planning and constructing schools (Jordan, 1988). In contrast, Nebraska's financing of school construction is totally a local school district responsibility. The state government relates to the school district through permissive legislation and regulation (Hudson, 1988).

Other methods used to finance the construction of school facilities from the state level include flat grants, equalization aid, state loans, authorities, and lease-rental financing. School districts most often fund their school construction locally through general obligation bonds. Well over 75 percent of all capital outlay costs are in general obligation bonds (Gipson, 1985; Hansen, 1984; Cambron-McCabe, 1984; California Coalition for Fair School Finance, 1984; Chick, 1987; Education Writers Association, 1989).

Local Taxation Options

General Obligation Bonds. General obligation bonds (GOBs) may be issued by a school district when there is a lack of cash flow or resources to tax. The district issues bonds where payment is guaranteed by the full faith and credit of the issuer. These bonds receive federal tax exempt status on their interest earnings. Nearly all school bonds are serial bonds, numbered and payable semi-annually or annually during the life of the issue. The other type of bond is term which matures on the same date and is redeemed at the same time. Four major criteria are used to develop bond ratings for school districts. The debt burden of the district, the administrative factors such as growth or decline in the school system, tax assessment burden, and the general state of the economy of the area, serve to establish bond ratings for school districts. (See Education Writers Association, 1989, p. 31).

Since general obligation bonds have to be approved by the electorate, some researchers have sought to determine when citizens are likely to support taxation such as GOBs. Bell and Coombs (1987) identified three necessary conditions for a citizen's yes vote on a school tax increase: (1) citizens must perceive that the school system needs the requested money; (2) citizens must believe that the money will be well spent; and (3) citizens must believe that the higher taxes are bearable. Their study showed that citizens who are parents of children in public schools are more likely to believe schools need more money.

Castaldi (1987) presents a strategy for developing community support. The strategy calls for determining the level of current public support for a potential bond referendum and selecting a propaganda technique that is motivating and in harmony with public sentiment rather than coercive. Castaldi advises a citizen's advisory committee be established. Most authorities (Castaldi, 187; California Coalition for Fair School Finance, 184; Chang, 187) believe it is better to start the public information program early in order to provide the citizenry sufficient and comprehensive information.

The Education Writers Association (1989) reported that bond approval rates are increasing slightly, 76.6 percent in 1986 to 79.8 percent in 1988. Several changes with GOBs are reported. First, the 1986 tax reform law specifies bonds are tax free to individuals, but not to corporations. Second, banks are reducing their investments in bonds. Finally, bonds are more costly if marketed to individuals rather than to banks.

Developer Fees. Many school districts levy developer fees directly on new construction. All or any part of the fees imposed by the district on new construction may be used for new permanent school facilities. School districts require developers to show evidence that such fees have been paid before building permits can be issued by the responsible local government agency. School districts can assess developer fees on new housing and commercial or industrial development unless and until the governing board has made the finding that a dedication bears a reasonable relationship to the needs of the community for elementary or high school facilities and is reasonably related and limited to the needs caused by the development. (See Kirscenstein, 1980; Smit and Hesse-Wallace, 1980). The fees are limited to a certain amount a square foot for residential construction and a lesser amount a square foot for commercial and industrial construction.

201 Developer Fees. When temporary housing for students is sought, the 201 developer fees may be applicable in one of three forms: fees levied by the city, county or by both. These fees may be required as a condition for approval of residential development.

Special Taxes. Cities, counties, and special districts, by a two-thirds vote of qualified electors may impose special taxes. Sometimes school districts benefit from tax bond sale alternatives which generally combine the functions of creating the revenue source and of leveraging that source through the sale of bonds. Revenue may be generated through the creation of "benefit" or "special" assessment districts. The "Poway" Plan, for example, allows a district to lease school facilities from a non-profit corporation. The non-profit corporation sells bonds to finance the construction of the facilities. The district collects money to pay the lease through an assessment levied on properties benefitting from the proposed construction. Under this plan, all land owners in the proposed assessment district must consent to the assessment before it can be implemented.

Anticipation Notes. Another method for raising the capital for near-term capital needs is the issuance of tax and revenue anticipation notes. This involves issuing one-year notes and using the invested proceeds to cover short-term cash flow deficits and/or to produce additional revenue. A school district can issue and sell tax and revenue anticipation notes either by competitive sale or as a negotiated sale with an underwriter or bank. The funds are invested until required to finance the project for which it was designed, and the notes are redeemed by the anticipated revenue when it is received.

Mello Roos. The Mello-Roos Community Facilities Act is a form of municipal financing. The structure is set up so that the local government and its constituency not only controls the development approval process but the financing process as well. The act authorizing Mello-Roos defines the area subject to a special tax as a Community Facilities District (CFD) and the qualified electors to be the registered voters residing within the district when there are 12 or more voters living within the district. When there are fewer than 12 registered voters living within the district, then the "qualified electors are defined as the owners of the land within the district with each landowner entitled to one vote per acre or portion theory" (Drexel Burnham and Lambert, 1989, p. 1).

Lease-purchase Agreements. Leasing has been used by school districts for a number of years to lease and ultimately acquire relocatable classroom units. Lease-type financing has several titles, i.e., municipal lease financing, installment purchase financing, or lease purchase financing. All are based on a lease agreement. Lease agreements are available to school districts to make payments to a lessor for use of equipment (i.e., relocatable classroom units). The leases are usually sold by an underwriter (a bank) to investors, and the proceeds are used by the district to acquire the equipment. This method can also be used to finance capital outlay. Lease agreements are not a source of revenue but rather a method of leveraging a revenue source in order to construct or otherwise obtain a capital facility needed by the school district. The security for the transaction is the asset that is financed. Not until all lease payments have been made does title pass.

Municipal Leasing. Municipal leasing has some significant advantages. This type of leasing is not considered long-term, therefore, a public entity's debt limitation will not be affected. Implementing fees are not added to the amount being financed. Also, voter approval is not required. The district or lessee retains complete control over the design, acquisition or construction and management of whatever is financed. Title to the capital equipment is held by the lessor to secure the financing.

LeRoy Greene Purchase-Agreement. As mentioned earlier, California school districts tend to finance their school facilities through a LeRoy Greene lease-purchase agreement. The school system enters into a lease-purchase agreement with another entity, such as the state, duly powered to act as lessor. An investment bank purchases the obligation from the issuer and sells them to investors. The technique has the advantage of not adding the issuer's bonded debt capacity. The reason for this is that lease-purchase payments are appropriated annually, and are thus deemed as current expense of the issue, not bonded indebtedness (Pierce, 1989, p. 50).

A lease-purchase agreement binds the district and the state to comply with all conditions stipulated in the original document and to any special conditions agreed upon in all subsequent amendments. The various provisions are collectively referred to as "the project." The lease-purchase agreement is binding once the State Allocation Board approves the project. The State Allocation Board has full charge of acquisition, construction, and completion of all projects. This control is exercised by approving applications for lease-purchase projects, making apportionments of school building funds, and establishing regulations, policies and procedures.

The process of entering into a lease-purchase agreement is for the school district to submit an application requesting funds for building new schools. This application is submitted to the regional Office of Local Assistance (OLA). A separate application by the school district is required for each project. Each application is assigned a project number. A relationship is established with the OLA to complete the first six fundamental steps in the construction process. All steps completed are verified through regulatory forms. The conduct of the construction of new schools under this plan is thus regulated and standardized throughout.

California, at the present time, has a school facilities package which allows more school districts to qualify for state funding. However, school districts are required to match any state funding dollar for dollar with local resources.

Certificates of Participation. Certificates of participation (COPs) are similar to a lease-purchase by a district. This method of funding is an outgrowth of the traditional lease-purchasing financing. COPs integrate the benefits of capital leasing programs with those of tax-exempt bonds which attract investors and yield lower interest costs. Specifically, COPs are certificates that represent an undivided percentage interest in lease payments made by the school district to a lessor for the lease of equipment and/or capital projects. The certificates are sold by an underwriter to investors and the proceeds are used by the district to acquire or construct such projects.

Asset Management. Another financial procedure which may be used by school districts to acquire funds is asset management. Asset management is a broad term that encompasses several methods of utilizing capital assets and property already owned to acquire additional capital facilities, or to accomplish other capital acquisition goals by better utilization or leveraging of those assets. Some methods are: sale of property, lease of property, tax increment financing (redevelopment agency) and joint venturing.

Sale of Property. The sale of property to generate funds for school building may be necessary for several reasons; zoning, condition, and size of the site, condition or disposition of any building on the site, street access to the parcel, and utility hookups may be factors necessitating the sale of certain parcels of property. School districts sometimes lease out property to generate revenue for capital outlay or other purposes.

Tax Increment. Tax increment financing or redevelopment is another way to finance capital outlay. Tax increment comes from the growth in property tax revenue within the redevelopment project area. The redevelopment causes an increase in the value of the property in the affected area and therefore, the tax on that property increases. This additional tax increment revenue is then used to finance the redevelopment project which may include a school.

Joint Venturing. Joint venturing is a combination of all of the above: sale, leasing, non-profit corporation and redevelopment agency status. Properly used, the private/public joint venture concept, when originated by the school district, in conformance with state goals and objectives, can become a viable alternative source of revenue for California school districts.

During the fiscal planning process the executive function is primarily a matter of decision-making. Determination of what resources will be used in the construction of the new school is made at this step. Professionalism enters at this stage to provide technical assistance in meeting legal requirements and identifying sources of funds. The representative function enters this stage in order to mobilize support for needed resource allocation. The school board in its representative role, decides whether and how much debt to incur for the construction needs. If the district plans to obtain funds through a general obligation bond, it is necessary for the community to be informed and supportive. Representatives can be used as positive spokespersons for the district. In order to increase the likelihood of parent and community support for funds for the construction of schools, the executive assumes the leadership in organizing these groups and in providing required information to the representative function. While final approval is a representative matter, executives generally assume the leadership in organizing parent and community support groups. Figures 3 and 4 illustrate the types of financing and state agency involvement.

Figure 3: School Districts' School Construction Funds Sources

State Grants and Loans	Local Taxation Options	Leasing Agreements	Asset Management
Flat Grants	General Obligation Bonds	LeRoy Greene Lease-Purchase Agreement	Sale of Property
Equalization Aid	Developer Fees	Municipal Lease Financing	Lease of Property
State Loans	201 Developer Fees	Installment Purchase Financing	Tax-increment Financing (Redevelopment)
Authorities	Assessment "Poway" Plan	Lease-Purchase Financing	Joint Venturing
Lease Rentals	Tax and Revenue Anticipation Notes	Certificates of Participation	
	Mello-Roos		

Figure 4: School Financing State Agency Involvement

State Grants and Loans	Local Taxation Options	Leasing Agreements	Asset Management
California School Finance Authority	California School Finance Authority	State Allocation Board	California School Finance Authority
Office of the State Architect	Office of the State Architect	Office of the State Architect	Office of the State Architect
California State Department of Education/School Facility Planning Division	California State Department of Education/School Facility Planning Division	California State Department of Education/School Facility Planning Division	California State Department of Education/School Facility Planning Division
		Office of Local Assistance	

Step #4: Educational Specifications Development, Site Selection, and Building Design

The fourth step, the school building planning, includes three distinct tasks: (1) developing educational specifications, (2) planning and selecting the site, and (3) designing the building. Often these tasks are treated as separate steps in the facility construction process, but there is a real danger in allowing these tasks to become separated. The literature shows many examples of the conflicts that can arise if these three tasks are not properly integrated (See for Example, Cay, 1985a; 1985b; 1985c; 1983; Day and Speicher, 1985).

Educational Specifications

Practitioners are advised to remember that "form can follow function in school structures only if the functions are presented in an understandable way to the architect(Mayfield, 1984). This defines the first key task of this fourth step in the building construction process. School building functions must be explicated in detail if architects are to perform their design tasks appropriately. This detailing of building functions is identified in the school facilities literature as the development of "educational specifications." Educational specifications are used by the architect to develop the architectural specifications for the school (Day, 1985a; 1985b; 1985c; 1983; Everett, 1986).

Even though McQuaid's (1958) work is from the 50's, his observations sum up the critical aspects of combining the educational specifications development, building design and site selection tasks. He wrote, "there is no such thing as a temporary school - and therefore, no escape from a long, discerning look into the educational future" (p. 39). He explains further that public schools have changed twice in the last two hundred years. The first change was to move from one-room schoolhouses into multi-room buildings. The second change was to add "program space" to the "classroom space" (p. 82). (See Manning, 1967 and Seaborne, 1971).

In California, the Department of General Services, under the police power of the state, supervises the design and construction of any capital improvement in excess cost of $20,000. No school district is authorized to construct or reconstruct any school building regardless of the source of funding, unless and until one of the following criteria has been met: (1) the district architect certifies the project satisfies the construction cost and allowable area standards, and (2) the district agrees that in subsequent application for state funding for school construction, construction not certified will be deducted from allowable building area. (See Holt, 1987).

The design of the school has a bearing on the cost of a school. Knirk (1979) identified several cost categories: surveys and consultants, 1 percent; bonding, 1 percent; site costs, 10 percent; landscaping and development, 7 percent; architects and engineers, 7 percent; heating and cooling, 6-11 percent; plumbing 4-6 percent; electrical, 3-8 percent; equipment and moveable furnishings, 7 percent; and miscellaneous, 2 percent. The remaining 40 percent is applied to the physical construction of the facility.

Floor Plans. The same researcher identified eight sample floor plans normally used to build schools. The corridor plan is a rectangular plan with classrooms on either side of a corridor. The courtyard and finger plans are variations of the corridor plan. These two plans are not desirable if the building is to be air conditioned. The extensive surface area of the exterior walls also increases the cost of the building. The loft plan offers a large amount of open space which can be arranged and rearranged with relative ease. This plan is ideal for air conditioning but noise and odors are more difficult to control. The circular plan is another open design which is internally flexible. This building is usually a single story building. The cluster school is ideally suited to acoustical or odor problems. The clusters may vary in size and shape but expansion is not as readily possible. Another design, the campus plan, is a macro-design; it may incorporate the corridor, finger, loft and circular designs. This design is essentially a series of schools on a single plot of land.

Gump (1980) in his analysis of school design in the 70's wrote that the forces for the new open design in the United States, Great Britain and Australia came from three directions. The first was grounded in an educational rationale which maintained that unpartitioned space was necessary for the open educational programs being developed. This notion was heavily influenced by the British infant schools. The second force pressing for construction of open schools came from the architectural profession. The new designs enabled architects to import imagination and originality in an area previously highly restricted. The third force was that the basic building cost was substantially less than the traditional design. This third force was particularly potent in the beginning phases of the era.

Landscaping. Other researchers (Linley, 1985) have had a concern with landscaping as part of the school house design. These researchers believe that the schoolhouse is the largest residence in the community and should be a good neighbor by exhibiting attractive and functional landscaping. The belief that site planning is the act of arranging the external physical environment to support human behavior is common among these writers. Attractive landscaping is based on the assumption that the external physical setting surrounding a school facility contributes to learning, enjoyment and pride. The notion that physical settings have some amount of control over how people behave in them is instructive(Frederick et al., 1976). Certain structures impede personal contact within the setting, whereas, others communicate the architect's intention that interaction should take place among people within that building.

Site Selection

Selecting the school site is a major task requiring executive leadership. Site selection involves three tasks: (1) applying selection criteria to each prospective site; (2) approving the selection by the board of education; and (3) developing criteria to govern the selection of a site. In California, the State Department of Education School Facility Planning Unit reviews and approves all new school sites and additions to school sites regardless of the source of funding (California State Department of Education, 1987, p. 2).

The site specifications which need to be considered and understood by those affected include: land area needed for buildings, entrance areas, landscaped areas, parking, bus loading, driveways, services, play-fields, and other physical education facilities, community facilities, special requirements for storm water retention ponds, sewage treatment plan, easement for utilities, and natural wooded or wet-land areas. Other considerations in site selection and development are traffic and access, utility needs, soils needs orientation, views, community visibility, image future expansion, future adaptability, re-use potential, zoning, building code, regulation restriction, security, police and fire protection and linkage to, and joint use of other community facilities. (See Brubaker, 1986; Council of Educational Facility Planners, International, 1985; Englehardt, 1970; Hill, 1984; Tanner, 1985).

Mechanical engineering advice may be sought regarding availability of utilities, building orientation, and the type of construction necessary (MacConnell, 1957). Civil engineering assistance is used to secure property descriptions and land titles, interpret title reports, and determine the availability of utilities and storm drainage, as well as the accessibility of the school to its neighborhood, and the limitations imposed on the site development by its topographical conditions. A foundation engineer may be used to analyze the physical properties of the soil in relation to the construction of the buildings. Lastly, an acoustical engineer may be needed to reduce the effects of noise.

If the site is within two miles of an airport, a map of the site and its location relative to the airport must be submitted to the School Facilities Planning Division. The California State Department of Education may request an investigation by the Division of Aeronautics. After aeronautics has completed its study, the CSDE notifies the district to proceed or not.

A field visit with the CSDE consultant is necessary. If the site is to be purchased by the state, the consultant needs to have three acceptable sites for comparison purposes. The CSDE consultant evaluates the three sites using the Field Site Review Form. The district, then, obtains authorization to proceed with site appraisals.

Building Design

Selecting the Architect. A third key task to be accomplished during this step, building design, is usually assumed by the architect. Selection of the architect is an important decision made with great care. Frank Lloyd Wright once said, "A doctor can bury his mistakes but an architect can only advise his client to plant vines" (Knirk, 1979, p. vii).

The main reason for constructing schools is to provide favorable, productive conditions for learning. The curriculum determines the activities and programs to be housed in the school. The physical size and learning shape of the classroom, learning center, instructional resources room, and library have a direct effect on the activities that go on within each of those areas. There is no better time for implementing a curriculum change than when constructing new or remodeling old facilities.

Kutkat (1983), an educator, explains the advantage of selecting the architect right after the school board determined it had a need for school buildings. The district found that having the architect in on all planning activities enabled them to build cost-effective schools. Wright (1986) likewise, hired an architect and a capital expenditure manager to work as a team in order to implement several cost-saving measures.

To insure that the proposed building results in a school, educational specialists and community representatives should be in direct and continuing contact with the architect. Educational specialists assure that ideas about the general character and design of the school are exchanged. Second, they help the architect arrange the school so that parents and other patrons can be a part of it. Third, they provide direct input about community activities which need to be accommodated in school buildings, and finally, they serve as another channel for the community to communicate their desires during a time when a significant educational move is being made which will affect everyone (Brubaker, 1982; 1986; 1988; Cold, 1986; Day, 1983; Elhanini, 1986; Hedley, 1984).

The fourth step has several junctures at which the professional and representative functions can easily come into conflict with the executive. For example, in the selection of a site, political considerations may override educational ones, granting the representative function dominance. The architect may assume the leadership in regards to the design of the facility, so that the wishes of the community and the needs of the educational personnel are ignored. In this case, the facility may be architecturally sound, but may not be an effective learning environment. It falls to the executive to insure that the district benefits from professional services and representative support, while keeping the design process moving toward conclusion.

Step #5: Bidding and Contracting

Once the school design has been approved and the site selected, the school district places the project up for bid. Five tasks are involved in the bidding process: (1) locating bidders, (2) issuing and retrieving documents, (3) receiving and tabulating bids, (4) analyzing the bids, and (5) awarding the bids. (See Chan, 1983).

Earthman (1986) identified three contractual agreements: (1) single contract with a lump sum; (2) construction management, and (3) design and build contract. The most frequent approach is to let a single sum contract to a general contractor. However, it is sometimes advantageous for school districts to consider multiple contracts with firms specializing in specific tasks (Kutkat, 1983; Haun and Earthman, 1983; Herron, 1983).

When the usual procedure is being followed, complete architectural plans and specifications are reviewed at a pre-bid conference between the architect and potential contractors. Following a closely monitored bidding process, the contract is awarded. Bidding and contracting are not well covered in the literature. The technical nature of the step serves to emphasize the legal aspect; almost no attention is given to the representative function. The role of the executive is not obvious, but it involves preparation of documents for the bidding and contract approval procedures. The executive makes arrangements as for necessary meetings, consultations, and information transmission to the relevant parties. Professional expertise is required for the technical specification development and to insure that documents are legally sound, architectural services and technical assistance are coordinated to insure that the bidding process is properly executed. The representative function is discharged by board members who legitimize the contract and assure the community that all provisions are in the interest of the school district. Others may enter the process to use data to inform the local citizenry of potential bidders, the bidding process, and the proper award. For example, media representatives who follow the process and report it to the community may legitimize this step. Throughout step five, the executive is responsible for the proper execution of the process and the recommendation of a competent contractor to the board.

Sometimes architects have a tendency to take over executive functions during this phase. Extensive involvement and knowledge about building design can encourage architects to act on behalf of the executive in bidding and contracting.

Representative lobbying for bidders may also assume leadership. They may dictate the nature of the process, and may call for procedural safeguards. Executives maintain control if they anticipate these tendencies and insist on retaining procedural authority.

Step #6: Facility Construction

The next step in the sequential planning and building process is to construct the building. Several considerations are taken into account during this step. First, the school building is intended to enhance the community image in two ways: through its contribution to the educational program and through its visual appeal. Second, the school building should possess some modifications. All instructional spaces should be capable of being altered in size and shape at a reasonable cost. All utilities should be easily accessible to all parts of a school building. The mechanical and electrical elements should be installed so as not to impede the relocation of interior partitions. Ceilings should be designed so as to facilitate changes within a school building. The type of lighting fixtures employed should not restrict the placement of interior walls within the building to any major extent. Finally, the design of the building should facilitate the installation of electronic devices in all parts of the structure (Abramson, 1983; 1984; 1986; 1985; Day, 1986).

Samption and Landes (1957) refer to modifiability in terms of certain principles: adaptability, flexibility, expansibility, and contractibility (p. 170). They suggest a number of features to examine: placement of the building on the site, traffic patterns and location of corridors, the central utility core (or the multi-purpose section of the building), and anticipation of new instructional technologies. Destructible or movable partitions and suspended ceilings are features that may be important. Anticipated usage in the future is important to consider.

During construction projects, Kutkat (1983) found that the biggest "budget bust" of all is change orders. By change orders, Kutkat means changes made on the building after construction begins. He advocates complete documentation for each change that is proposed. This is important for the school district because ultimately the superintendent accounts for all financial transactions relating to the construction project. (See Epperson, 1983). Probably the most important task of the contractor in a school building is the adherence to a time schedule (Knirk, 1979).

During actual construction of the building, the executive concentrates on budget allocation, the construction schedule, and coordinating the work of architects, contractors, and construction engineers. Work during this step is controlled mainly by professionals - architects, engineers, and educators - who oversee technical aspects of construction and assure that educational specifications are incorporated into the building. The representative function is generally peripheral, confined to concerns about the structure and the building process. Some groups may complain about construction noise and disturbance or perhaps praise the efficient manner in which the construction process is progressing. The executive is responsible for insuring that the approved design for the structure is adhered to and that the structure is built according to the planned budget and schedule.

Step #7: Occupying the Building

Once the constructed building is ready for occupancy, the seventh step in the process is to occupy the building. Earthman (1987) recommends that various user orientation and public information programs be prepared and conducted. He makes several suggestions (1986) on a number of occupancy activities that may be conducted. A staff orientation may take place which includes building tours, in-service sessions with other educators, mock fire drills, discussions centering on floor plans, and question-answer sessions with the architect. The building dedication, an open house for parents, student orientation, building tours for the community, media publicity and printed materials also serve to let the community know about the new school (Jilk, 1987; Council of Educational Facility Planners, International, 1985; MacConnell, 1957).

During the building occupancy step the executive emphasizes engaging school personnel, students, and parents in committing their loyalty and support to the school program. At the seventh step, it is the executive's responsibility to lead school personnel, students, and parents in the public acknowledgement of the completed building and to solidify their commitment to the project and to ensure their support in the future maintenance of the site. Professionals are called in to administer the proper ceremonial and ritual activities. Professionals may also advise the executive on how best to incorporate the various groups in the community for school support. Representatives such as school board members, participate in the opening activities, showing their support for the facility and its mission. Other political and professional dignitaries are also included in these activities. Educators may assist in initiating the development of intellectual and schooling norms. Their presence and their expressed sentiments provide support for the school district.

Step #8: Post-Occupancy Evaluation

The eighth step in the process of constructing schools is the post-occupancy evaluation. Earthman (1985) presents four reasons why a post-occupancy evaluation should be conducted: (1) to modify or correct an existing building; (2) to provide guidelines for future facilities; (3) to evaluate the programming criteria and design effectiveness; and (4) to gather data on how people use and respond to the building. Most authorities recommend that the initial evaluation take place one year after occupancy and then at intervals during the next five years (Earthman, 1985).

For the post-occupancy evaluation, several types of data-gathering instruments may be used, such as observational schedules and questionnaires. School building survey specialists have made significant contributions to the present state-of-the-art of facilities evaluation. Check lists, rating scales, workbooks, score cards, evaluation forms, and appraisal guides have been developed. Since the product of the school planning effort is the facility, two approaches have been used to determine the quality of the product. The first approach is to assign a total score for a perfect school building with specific scores given to each item related to a particular aspect of the school design. Sub-scores are assigned to each item by the evaluator and totaled to obtain the total score for a school plant. The second approach is to begin with a perfect score on each item and assign penalty points for each shortcoming observed.

The score for a particular facility is obtained by subtracting the penalty score from the assigned "perfect" score for each item.

The objective of the evaluation of the school site in particular is to determine if the site is centrally located and easily accessible to the present and future population; removed from undesirable industry, business and traffic; and is large enough to meet educational needs. As a standard, an elementary school site should encompass ten acres plus one acre for each 100 students. The middle school site should be 20 acres plus one acre for each 100 students. High school sites require 30 acres plus one acre for each 100 students. All sites should also be large enough for future on-site expansion.

The school site should also be well landscaped. The topography should be varied enough to provide the desired appearance but without steep inclines. Campus soil should be stable and free of erosion.

The structural and mechanical features are examined to determine if the structure meets or exceeds all barrier free requirements. The foundations are checked to see if they are strong and stable. The exterior and interior walls are examined to see if they are free of deterioration. Roofs are examined for their soundness. The entrances and exits are to be located to permit traffic flow. The building "envelope" should meet energy use code requirements. Walls should permit flexibility for a variety of class sizes. The interior should be free of toxic materials. The electrical service should be underground. The electrical controls should be safely protected.

The structure is also evaluated to see if it is "educationally adequate." Educational adequacy means that the learning areas should be compatible with the state instructional ends. The appraisal criteria should determine whether or not the site and building are well-equipped (See Akers, 1984; Hawkins, 1977; Hawkins and Lilley, 1986; Keck, 1978; McGuffey, 1974; Reida, 1962; Strayer and Englehardt, 1923; Samption and Landes, 1957).

During the post-occupancy evaluation, the primary executive function is judgment, the expert's function is inspection, and the representative's function is accountability. Professionals, such as engineers, may be enlisted to examine specific aspects of the structure or to evaluate potential changes to identified problem areas. Educational personnel may be solicited for their professional judgment on issues such as the design of the library or science and technology laboratories. Representatives, such as parents, and professional or civic associations (such as the PTA or Lions Club) may be invited to tour the plant to express their views on adequacy, usefulness, or innovativeness. Throughout this process the executive monitors the evaluations provided and ultimately approves the building or requests changes.

During this step, professionals may assume leadership when school facilities' specifications are found to be faulty. For example, a site's grading results in flooding and drainage problems. Engineers may assume dominance as they seek to satisfy angry parents or frustrated school personnel. Representatives may assume dominance as the media is called in to expose the problem.

Step #9: School Facility Use

The ninth step in the process of constructing schools is building use. Minzey, Townsend and Hill (1984) express concern over the use of school buildings. Minzey and Townsend suggest that buildings be designed around a "core" which would be permanent and would house such community areas as the gymnasium, pool, library, meeting rooms, cafeteria, auditorium, and community office space. The remainder of the school, what Minzey, Townsend and Hill refer to as the "plus," are those areas of the facility, such as classrooms, which are temporary in nature and can be increased or eliminated as the needs of the community change (p. 19). Hill (1984) in a similar manner writes "educational facility planning can no longer be administered independently of surrounding social, economic, or political forces. Instead, it should be planned, programmed, and implemented jointly..." (p. 4).

In order to deal with issues of shared use, the traditional practice has been to lodge the responsibility for the management of multi-use of school buildings with district personnel. Ayres (1984) reported that the establishment of an interagency planning process is ideal. There are two major obstacles in multiple use of school buildings: (1) the "traditions" which exist in the use of school buildings, and (2) the funding of those buildings (Lutz and others, 1987, p. 3; Stewart, 1985; Swenson, 1987). Ayres found that the use of formal policy boards and working task forces to negotiate multi-use policy decisions lead to increased availability of educational facilities, enhanced revenue potential from building use, and improved facility design.

One study (Nisbet, et al., 1980) is reported which attempted to use school buildings as community buildings. The study was conducted in Scotland. Two assumptions guided the research and the project. The first was to extend educational opportunities across age and class levels and the second was to provide an institution which encouraged education as a life-long process. The report indicates that integration of school facilities with community use is a complex process primarily because bringing together two groups, teachers and community education workers, with different perspectives has the potential for conflict.

The Organization for Economic Cooperation and Development (1978) undertook a Programme on Educational Building (PEB) between 1972 and 1981. The member countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, The Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Japan, Luxemberg, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, The United Kingdom, The United States, and The Socialist Federal Republic of Yugoslavia undertook to exchange information regarding the construction and use of schools. The most significant conclusion they arrived at in the report is that "an important distinction in the issue of building use is that related to planning a set of facilities and planning concerned with relationships between one set and another" (p. 189). They refer to each facility as having its own magnetic field. That is, each facility is attached to its own community.

Finally, Kowalski (1989) explains that the expanding usage of schools is driven by two considerations: escalating taxes that encourage citizens to expect more benefits from the investment in a school building, and increasing acceptance of lifelong learning and other new values that make school and community services inseparable. (See Council of Educational Facility Planners, International, 1980).

During the building use step, the executive is responsible for deciding whether and how to expand the building's use, and when to share the building with others. The executive's function is to negotiate among competing interests and insure that educators' expertise is dominant in the considerations for these buildings. It is the executive who decides whether the building would be used for year-round, or extended-day and week use. It is also the executive who guides representative boards in deciding who should share the school building with the district. The executive determines how to cover or recover costs incurred from multiple-use of the school building - the executive may call on professionals such as recreational personnel for advice about extended use or call on professionals for guidance about day care or other uses of the facility. Professional child development specialists and legal authorities may be counseled regarding liability and safety measures. Representative groups - the school board or parent groups -often influence the scope or regulations for multiple use of buildings. Representatives from local agencies create the demand for facility use. In the end, school building use acknowledges the representative function by advocating the use of public dollars to share public educational facilities.

Several generalizations may be drawn from the review of the literature. First, the steps required to construct new schools are well-identified and documented. The functions necessary to perform the steps are less well understood. The executive function is recognized, but enactment of this role is left to individual interpretation. The call for professional expertise is also clear, but it is generally discussed in relationship to the technical nature of particular aspects of the steps rather than with the overall flow of the process. The role of democratic representation is acknowledged in the literature, but its contribution is perceived as general involvement, rather than as an integral component of the process. (See MacConnell, 1957, pp. 77 & 78).

The textbook literature does not address school district-state relationships in the conduct of constructing new schools. The literature dealing with California school facility funding presents technical, legal, and fiscal information but neglects to distinguish between regulatory, fiscal, and distributive bases for associating. The present study intends to show, theoretically and practically, how the state and school district relate to each other.

The interorganizational and interpersonal dimension associated with the relationship between the state and school district are not addressed in the literature. This study will show how differing motivations on the part of the state and the school district determine the interpersonal interaction that takes place between the state and school district officials. The consequence of this relationship is the school district's appointment of the person who fulfills the executive function.

Figure 5 summarizes the coverage of the theoretical framework in the literature.

Figure 5: Review of the Literature Theoretical Framework

Steps	Executive	Professional	Representative	Literature
Needs Assessment	Initiative	Demographic Analysis	Recognition	Involvement Advocated
Long-range Plan	Organization	Advisory	Legitimacy/ Direction	Covered in Literature
Fiscal Plan	Decision Making	Technical Assistance	Mobilize Support	GOBs Calif. State Lit.
Building Design	Integration	Technical Assistance	Preference to Representation	Steps separate Functions and Conflict
Contract Bidding	Authorization	Expertise	Legitimation	Technical Literature
Construction Management	Supervision	Expertise	Legitimation Support	Technical Literature
Occupy Building	Leadership	Administration	Support	Technical task
Evaluate Building	Judgement	Inspection	Accountability	Task completion without judgement
Building Use	Negotiation	Advice	Advocacy	Small body of research. No mention of functions

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